

# LEACH

CAPABILITIES IN AEROSPACE ELECTRONICS







## A HERITAGE OF THE AIR...

The Leach reputation for reliability and tradition of technological advancement is firmly rooted in a 40-year history of achievement. And, in meeting the most stringent of specifications in the aircraft, missile and electronics industries, the Leach name has been closely identified with man's conquest of space. Today, Leach communications, telemetry and recording equipment is found in almost all major defense and space programs — from subminiature telemetry receivers for Minuteman to lunar flight tape recorders for Project Apollo.

Keeping pace with its rapid growth in capabilities and facilities—a pattern which has distinguished Leach Corporation since its inception—the company has expanded its operations through Leach International, S.A. (LISA). Headquartered in Switzerland, LISA offers Leach products and technical developments to our European allies.

The Leach heritage of the air dates back to the development of the company's first product—a break-in relay introduced in 1919—and the first power relays ever designed specifically for aircraft use. There are now more than 5,000 variations of 30 basic types of Leach relays serving the aerospace industries—and they fly with virtually all U. S. aircraft, from every Douglas plane ever built to the nation's newest jetcraft.

Guided by a management noted for anticipating the needs of science and industry—and meeting those needs with products of unparalleled reliability—Leach today shares its heritage of the air by helping to strengthen the defenses of the free world. In large measure, this means dedication to the development of new and advanced components and systems for vital U. S. defense and space exploration programs.



## SPACE ELECTRONICS:

### GUIDEPOST TO THE FUTURE



It was by choice, not chance, that the future of Leach Corporation became linked to space electronics. Management made the decision—but the success of the first airborne Leach relay actually pointed the direction. The reliability of new

and sophisticated Leach advancements in data control, storage and transmission equipment and systems points in the same direction.

Space electronics is the Leach guidepost to the future, and the way is up—skyward.

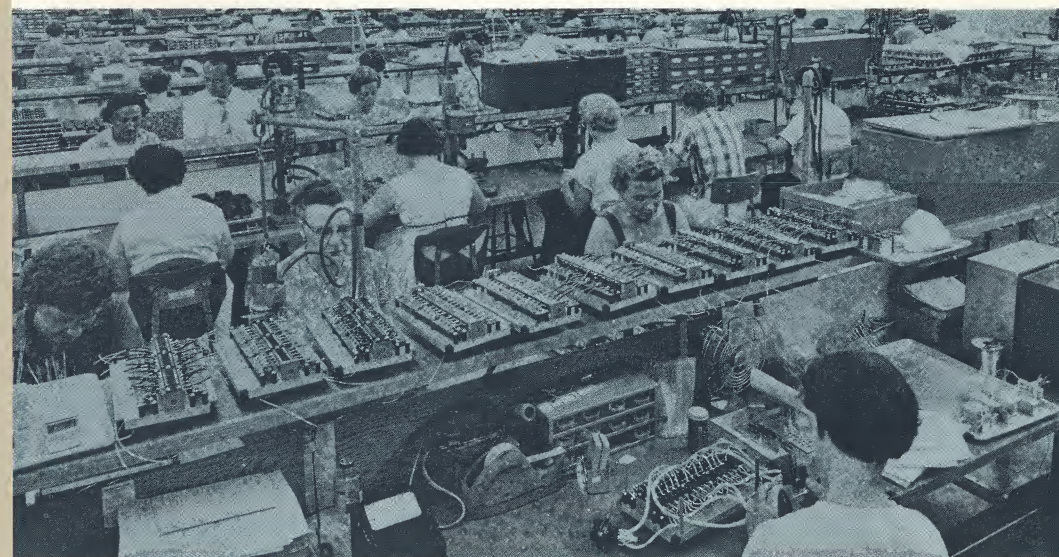
From its beginning as an innovator for the aircraft industry, Leach has progressed as a partner to the pioneers in aviation . . . in electronics . . . and in space. It is a partnership of people.

Many Leach engineers and designers who were instrumental in developing the full potential of the company's switching and control devices are with Leach today. To their ranks we have added a cadre of scientists and technicians whose futures in space electronics parallel the goals of an aggressive and market-minded management.

In all, Leach employs more than 800 people. Many have been with the company from 5 to 30 years, and more than 15% of them are engineers and technicians. It is their teamwork that creates the complex products and custom-designed systems described on the following pages. It is their unique combination of skills that assures the Leach future in space electronics.

*K. F. Julin*

K. F. JULIN, President



- 1 Closed circuit television provides precision assembly instruction.
- 2 In Leach "white room," electronic dust control, temperature and humidity control assure contaminant-free component assembly.
- 3 Components are removed from "white room" through special chambers that help keep them free of contaminants — another Leach safeguard in quality control.
- 4 Special facilities are devoted to the production of miniature Leach relays, noted for their high performance and precision.
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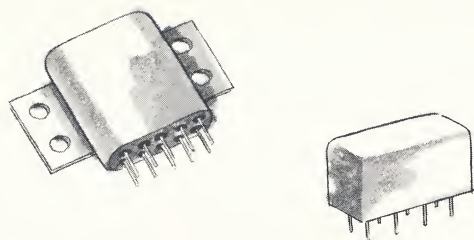
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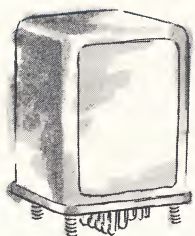
A handwritten signature in dark ink, reading "K. F. Julin". The signature is fluid and cursive, with the first and last names being more prominent.

K. F. JULIN, President





## FOR AIRCRAFT, MISSILES AND ELECTRONICS



under frequency, phase failure and phase reversal malfunction components.

Future growth of the Leach Relay Division is keyed to research and development for special high reliability programs . . . capabilities in the development and manufacture of nuclear hardened components . . . and the continuing trend toward greater miniaturization.

The division's Los Angeles facility is as contaminant-free as the products it turns out. Here, in a total area of more than 60,000 square feet devoted to the quality manufacture of relays, the air-conditioned assembly area features fully controlled temperature and humidity. New electronic welding equipment augments production.

An area of more than 10,000 square feet is devoted to the division's engineering laboratory and reliability center. The lab is equipped with such environmental testing equipment as vibration units, shock test machines, 400-cycle and DC power supplies to simulate aircraft power and various secondary electrical and mechanical standards of measurement. The Leach reliability center is noted for its programs of "torture-testing to perfection."



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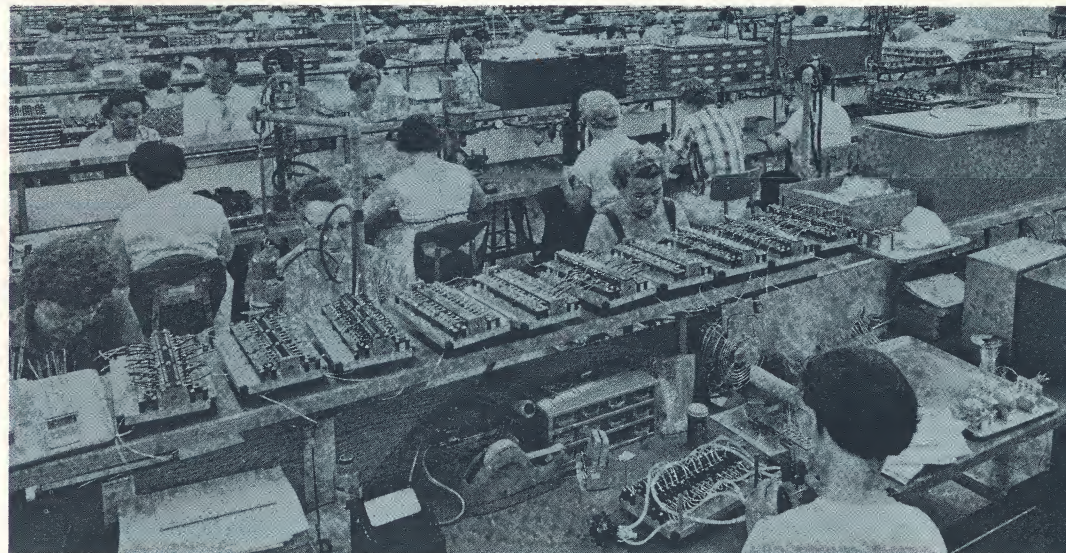
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## LEACH RELAYS: AN INFINITE VARIETY



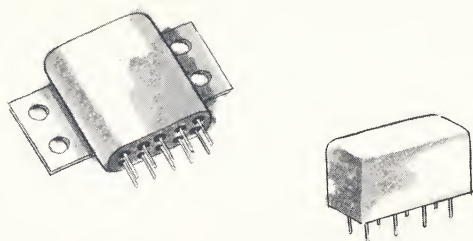
*Leach Relay Division, Los Angeles.*

In the early fifties — 30 years after the development of its first relay and a full decade after the company had produced its initial power relays and heavy duty contactors to rigid aircraft specifications — Leach revolutionized the relay industry with its design of a contaminant-free “balanced armature” unit. Capable of withstanding shock to 50 G’s and vibration of 15 G’s to 2,000 cps, this relay was used throughout Century Series aircraft.

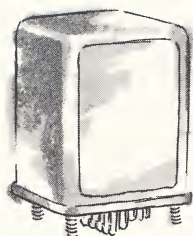
When the first satellites circled the earth and the U. S. avionics industry demanded components of greatly reduced size and weight — with resistance to even higher shock and vibration forces — Leach was prepared to meet these critical requirements. Backed by experience and production capability, the Leach Relay Division led the industry in development of even smaller components.

Today, Leach designs and manufactures electromechanical relays ranging from subminiatures to large contactors of several hundred ampere capacity, including proprietary lines of over-and-under voltage, over-and-





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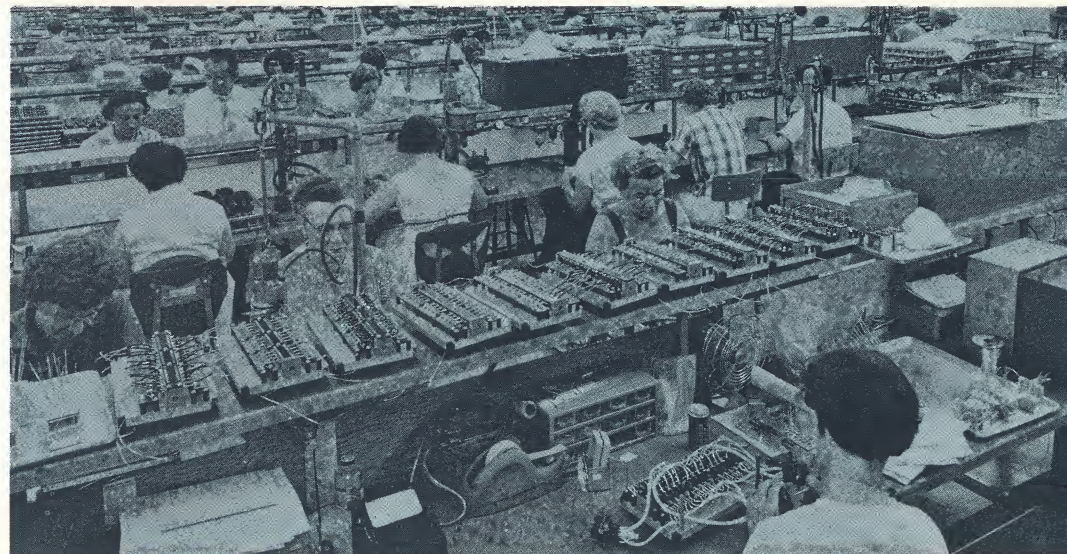
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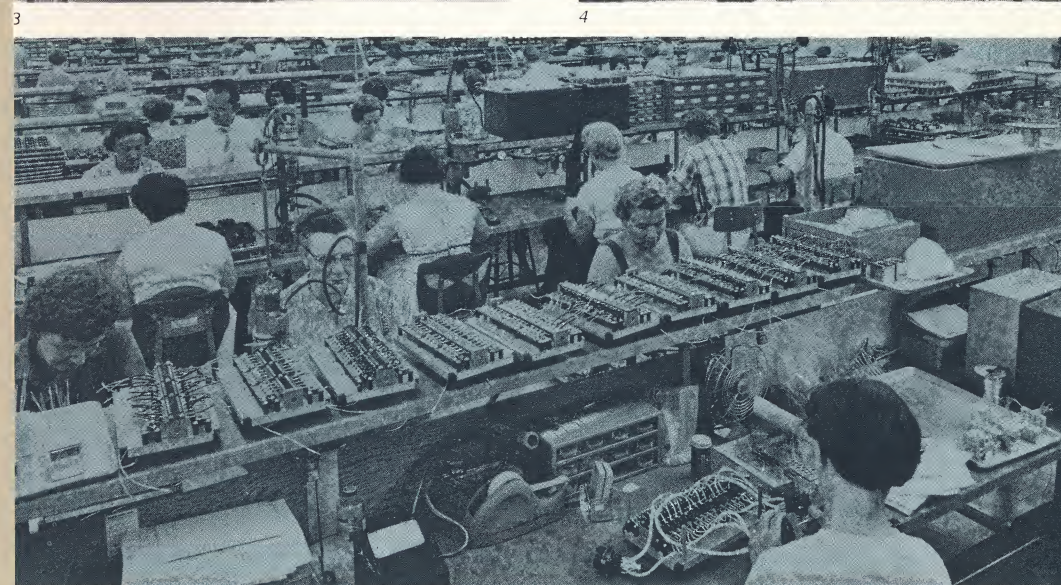
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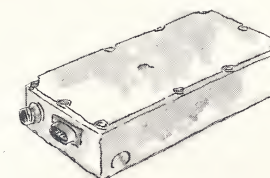
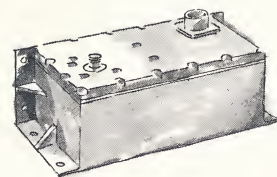
*K. F. Julin*

K. F. JULIN, President

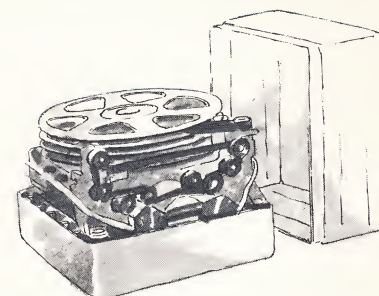
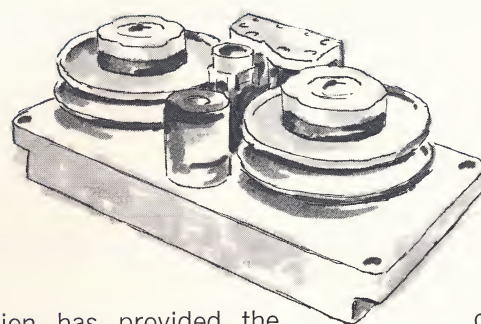


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## LEACH CONTROLS: ADVANCED CAPABILITIES IN DATA CONTROL, STORAGE AND TRANSMISSION



*Leach Controls Division, Azusa, Calif.*

Diversification has provided the key to Leach capabilities in aerospace electronics.

In 1953 Leach expanded its product line to include electrical power generation and conversion equipment. Four years later the company extended its capabilities into data storage and recording equipment and, in 1959, through further acquisition and diversification, Leach broadened its capabilities still further to include data transmission equipment. With the sale of its power and conversion equipment interests in 1961 Leach was able to concentrate all its efforts in developing electronic products for the space age.

Today the Leach Controls Division specializes in the design and manufacture of electronic products particularly suited to meet the stringent requirements of miniaturization and high environmental conditions: miniature magnetic tape recording systems, modular electronic sub-systems, telemetry transmitters and receivers, digital test equipment, logic and timing devices. In fact, the division's entire capability and facility is oriented toward meeting RFI applications and advanced systems requirements, including the development of radiation resistant

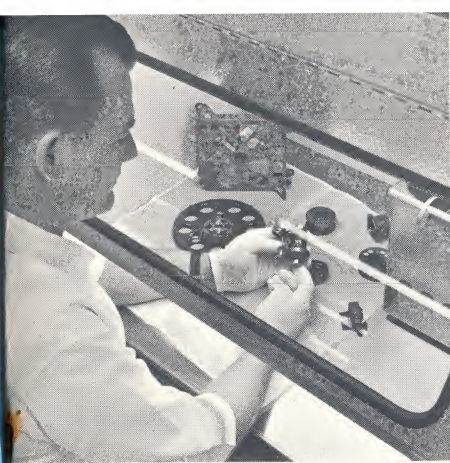
components and systems.

Since its inception, the Leach Controls Division has been geared to undertake the development of custom-designed systems and equipment for prime contractors and systems integrators. These special design and development projects have varied from crash recorders and amplifier systems to high-speed sled track data acquisition systems and a nuclear-hardened magnetic recorder for satellite applications.

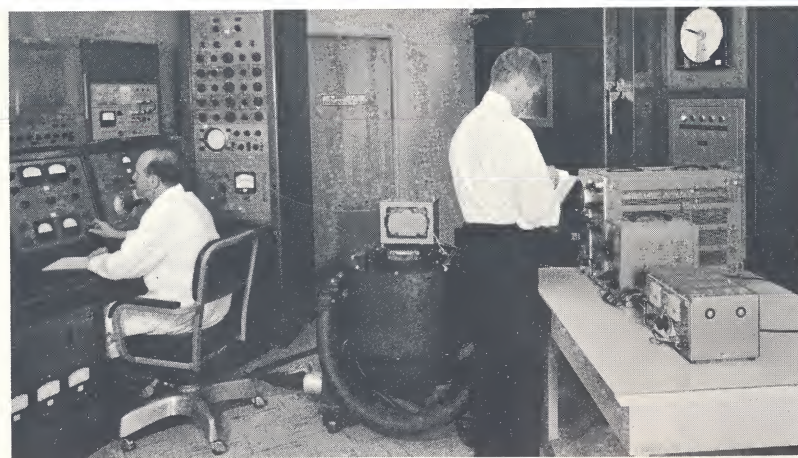
Leach's all-new, air-conditioned Controls Division facility at Azusa, Calif., provides 42,000 square feet of design, test and assembly space for the manufacture of electronic communications equipment and systems. The ultimate assembly area is contained in a 12,000 square foot "white room" where an elaborate temperature, humidity and electronic dust control system assures a constant level of ideal environmental conditions.

The division's laboratory is the most modern in the industry. Its environmental equipment includes three separate chambers for simultaneous testing to rigid specifications of temperature, altitude and humidity. A complete random noise, sine wave and vibration test system was specifically designed for the needs of this test installation.





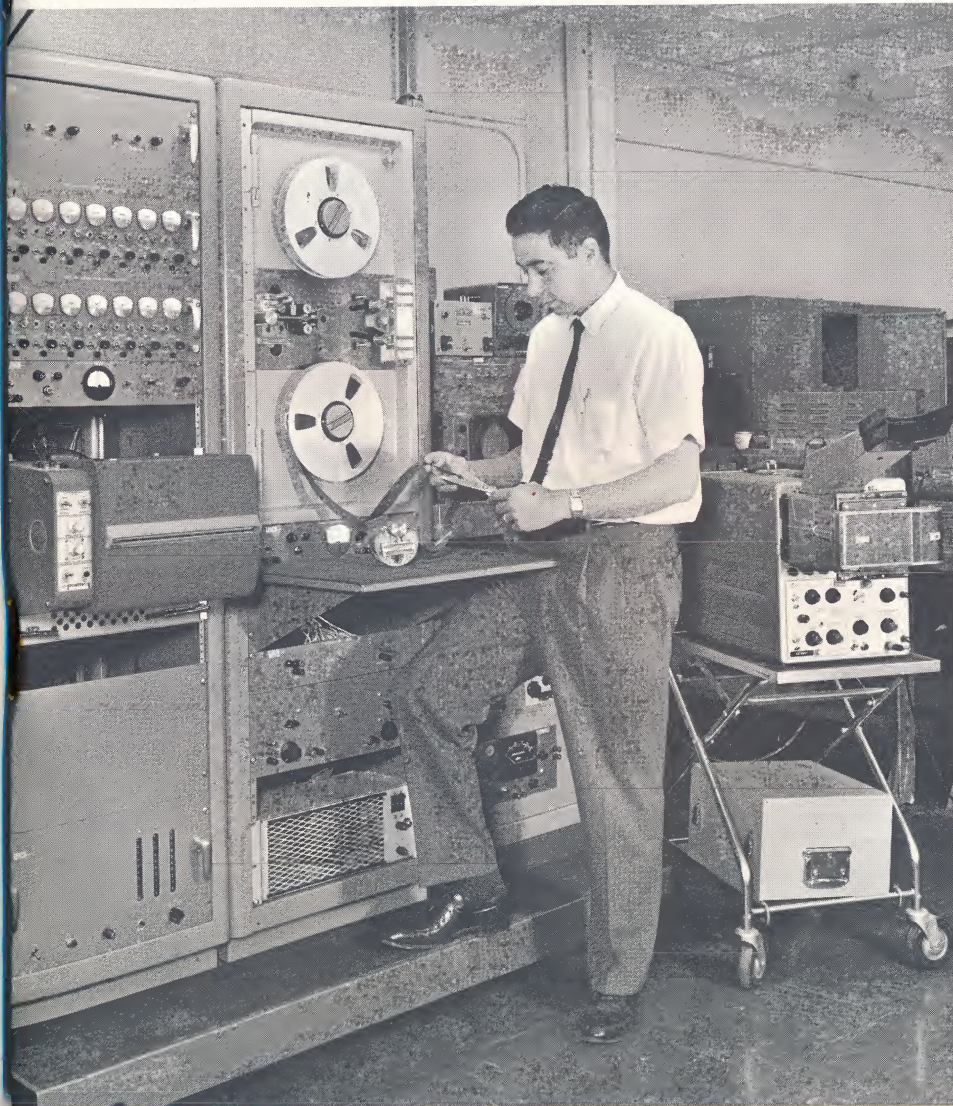
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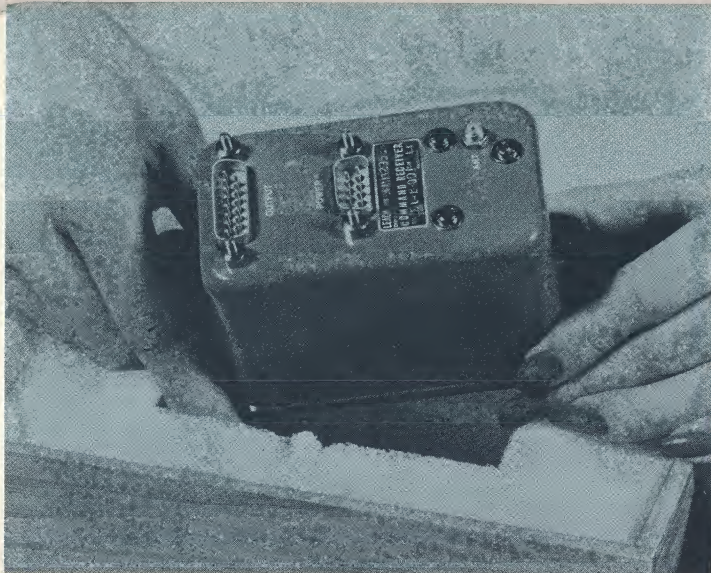


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6. An air-filtered, dust-controlled cabinet is essential to the assembly of containment-free precision mechanisms.
7. In a section of the Leach environmental test facility, newest of the company's tape recorders undergoes vibration testing.
8. Engineering development laboratories are a vital part of the design, testing and assembly facilities at Azusa plant.
9. Leach built the testing unit shown here. Tape recorders are tested on this ground playback equipment.
10. Quality control inspector works closely with assemblers in a major assembly area devoted to production of electronic components.

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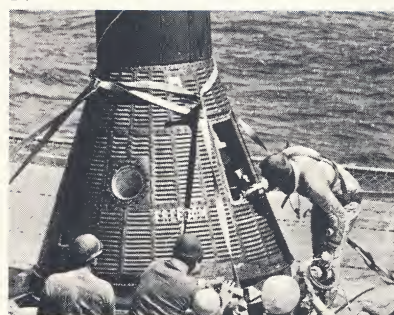
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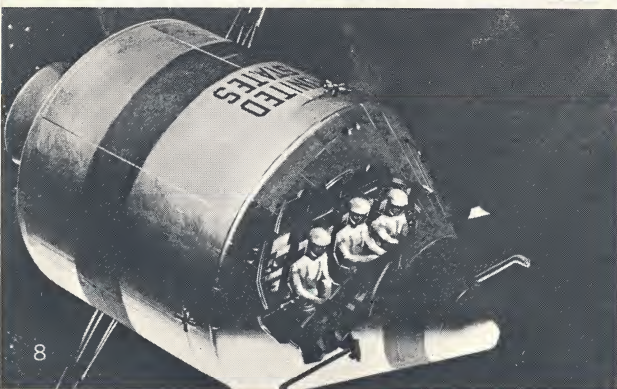
## CURRENT LEACH DEVELOPMENTS IN AEROSPACE PROGRAMS



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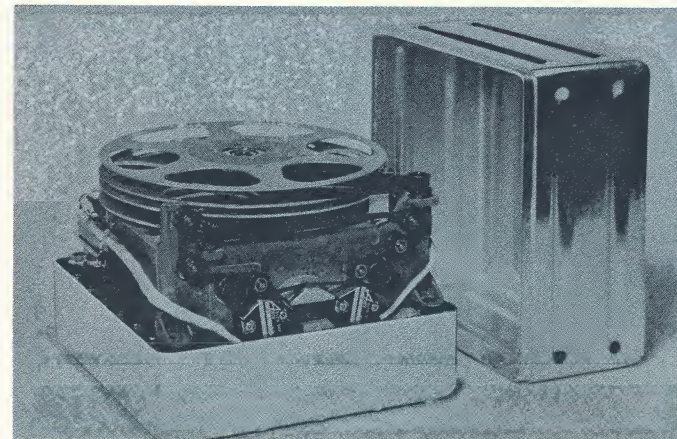


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11. Subminiature telemetry receivers for the Minuteman program.

12. Polaris 14 channel analog recording system.

13. Lunar flight tape recorders for use by Project Apollo astronauts.

14. Project Mercury program uses approximately 116 Leach relays in each capsule.

15. Discoverer satellite recorders.



## LISA: CAPABILITIES IN SPACE

## ELECTRONICS FOR THE FREE WORLD

THROUGH LEACH INTERNATIONAL, S.A. (LISA), nations of the free world are offered the same capabilities in space electronics that Leach customers receive throughout the United States. LISA was established in 1960 and is staffed and experienced to handle critical electronic and electromechanical requirements—from the early stages of design to the final phase of production.

The Leach Relais and Elektronik facility, located in Munich, houses one of the newest production, reliability and test facilities in Europe. The acquisition of Leach Electronique, S.A. (APEM) in Geneva has completed a relay product line that ranges from subminiature units to 400 ampere contactors.

LISA's management team coordinates all management and marketing activities of Leach International, including the services of 18 representative offices spread throughout Western Europe.

Orientation of Leach technical sales engineers for LISA is conducted in the United States. Following six months of "basic training" in this country—including instruction in several languages—these technical sales personnel are sent abroad to staff the ever-growing network of LISA branches in the scientific and industrial centers of Europe. The success of the program is reflected in growing sales and the expansion of present LISA facilities.

### LEACH INTERNATIONAL, S.A. (LISA)

#### EUROPEAN BRANCH SALES OFFICE

Rue Peillonex 39  
Chêne-Bourg, Geneva  
Switzerland  
Telephone: (022) 35 09 20

### SUBSIDIARIES

#### LEACH RELAIS & ELEKTRONIK GmbH (LRE)

Kreittmayrstrasse #5  
Munich 2, West Germany

#### LEACH ELECTRONIQUE, S.A. (APEM)

Rue Peillonex 39  
Chêne-Bourg, Geneva  
Switzerland  
Telephone: (022) 35 09 20

## LEACH CORPORATION

### CORPORATE HEADQUARTERS

405 Huntington Drive  
San Marino, California  
Telephone: 682-3506

### CONTROLS DIVISION

717 North Coney Avenue  
Azusa, California  
Telephone: 334-8211

### RELAY DIVISION

5915 Avalon Boulevard  
Los Angeles, California  
Telephone: 232-8221





## **LEACH SALES:**

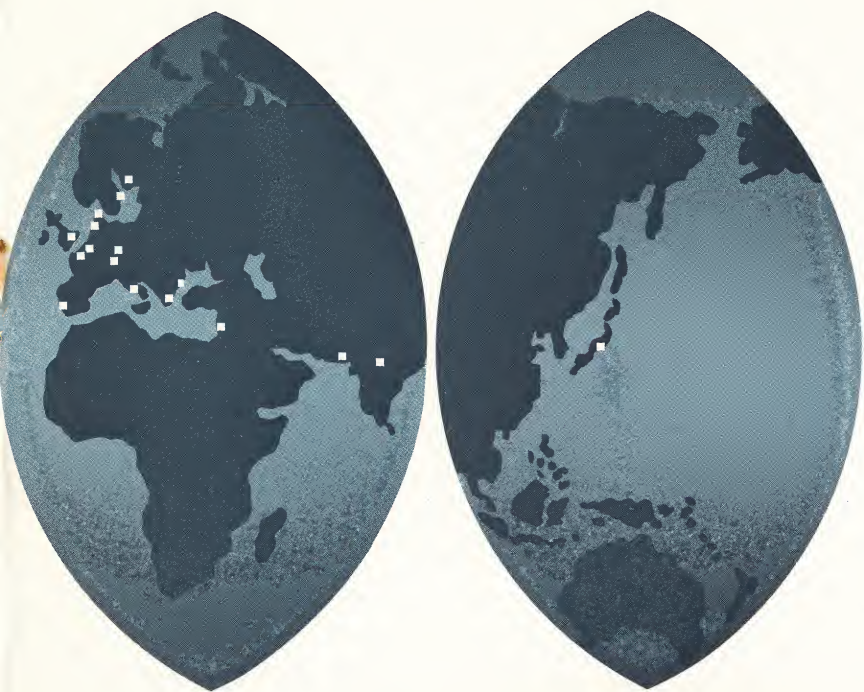
## **THE WORLD IS A MARKETPLACE**

One of Leach Corporation's most important contributions to the electronics industry — and one of its most valued customer services—stems from the Leach marketing philosophy.

All merchandising efforts of the corporation are centrally controlled—and widely scattered. To Leach, all the world is a marketplace. Wherever there's a need for space electronics there's a Leach district office . . . or a representative . . . or a Leach electronic distributor.

The company has set a new trend in electronic dis-





■ Leach District Offices, Sales Representatives and Electronic Distributors

tribution and service. In the United States, permanent district offices staffed with more than 30 sales engineers and administrative personnel are located in every major marketing area. These offices provide maximum service to the key defense and space programs in which Leach participates. In addition, well-established firms of sales representatives service Leach customers in other parts of the country. To round out the marketing picture, electronic distributors in all important domestic market centers stock standard Leach products.

#### **LEACH INTERNATIONAL, S.A. (LISA)**

##### **EUROPEAN BRANCH SALES OFFICE**

Rue Peillonex 39  
Chêne-Bourg, Geneva  
Switzerland  
Telephone: (022) 35 09 20

##### **SUBSIDIARIES**

##### **LEACH RELAIS & ELEKTRONIK GmbH (LRE)**

Kreittmayrstrasse #5  
Munich 2, West Germany

##### **LEACH ELECTRONIQUE, S.A. (APEM)**

Rue Peillonex 39  
Chêne-Bourg, Geneva  
Switzerland  
Telephone: (022) 35 09 20

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Telephone: 682-3506

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Azusa, California  
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##### **RELAY DIVISION**

5915 Avalon Boulevard  
Los Angeles, California  
Telephone: 232-8221



**LEACH** CORPORATION  OVER 40 YEARS IN ELECTRONICS